

A NEW SPECIES OF *CUPIENNIUS* (ARANEAE, CTENIDAE) COEXISTING WITH *CUPIENNIUS SALEI* IN A MEXICAN MANGROVE FOREST

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ABSTRACT. The new species *Cupiennius chiapanensis* is described from a mangrove forest in the coastal regions of Chiapas, México. The most noticeable characteristic of the species is the bright red coloration of the chelicerae, given by a covering of long setae on the anterior surface; because of this coloration, it has been previously confused with *Phoneutria fera* Perty 1833. It is generally similar to *Cupiennius getazi* Simon 1891, but lacks the spotted pattern on the ventral surface of the femora, together with other differences in genitalic morphology. *Cupiennius salei* Keyserling 1877 was also found on the same forest during the wet season, while *C. chiapanensis* appeared in the dry season. Adults of both species were never collected at the same time. This is also the first record of *C. salei* at the sea level, being previously considered a highland species.

RESUMEN. Se describe *Cupiennius chiapanensis* nueva especie, la décima del género. Fue recolectada del manglar de la costa de Chiapas, México. La característica más notoria es la coloración roja brillante de sus quelíceros, dada por una cubierta de sedas largas en el frente del quelícero. Esta coloración ha provocado que se le confunda con *Phoneutria fera* Perty 1833 en tres referencias que se documentan. En general, es similar a *Cupiennius getazi* Simon 1891, pero no exhibe el patrón moteado en la superficie ventral de los fémures, además de otras diferencias en su estructura genital que se discuten. Se encontró también en el mismo bosque a *Cupiennius salei* Keyserling 1877 durante la época de lluvias, mientras que *C. chiapanensis* apareció durante la época de secas. Los adultos de ambas especies nunca fueron recolectados en la misma época. Este también es el primer registro de *C. salei* a nivel del mar, pues era considerada una especie de tierras altas.

Keywords: Mangrove forest, *Cupiennius*, wandering spiders, taxonomy, new species

The genus *Cupiennius* Simon 1891 is comprised of nine species distributed throughout Mexico, Central America and Cuba, while *Cupiennius celerrimus* Simon 1891 is found from Venezuela to Brazil. The latest revision of the genus (Lachmuth et al. 1985) regards the terminal apophysis of the male bulb, and the internal epigynal structure as diagnostic characteristics among the species; the external coloration is often taken into account for some species. In a later work, *C. remediatus* Barth & Cordes 1998 was reported as the only species known to share habitat with *C. salei* Keyserling 1877 (Barth & Cordes 1998).

During a study on the spider fauna of a mangrove forest in the reserve “La Encrucijada”, Chiapas, México, specimens of *C. salei* and a different species of the same genus were collected in exactly the same localities, but in different seasons. This other species displays

sufficient differences to be considered as a new species. Several references to this same spider have been found in several publications and web pages (Browning 1989; Alvarez del Toro 1992; Spider Homepage 2000) where it has been incorrectly referred to the genus *Phoneutria* Perty 1833.

In the present paper, this new species is described, the tenth of the genus and the second besides *C. salei* to be reported from Mexico. Some aspects concerning the occurrence of both species in a mangrove forest are discussed.

METHODS

The specimens were collected during three expeditions to the reserve “La Encrucijada”, in Chiapas, México, in April 2002, September 2002 and April 2003, on the island “Solo Tú” (15°04'28"N, 92°45'49"W) and in the path

called "La Vida Sigüe", next to the monitoring station (15°04'06"N, 92°45'20"W). The plant coverage at the sites corresponds to a mangrove forest, where *Rhizophora mangle* (red mangrove) is the dominant species, associated with *Laguncularia racemosa* (white mangrove). The understory is mainly composed of ferns (*Acrosticum aureum*) and "piñuela" *Bromelia plumieri* (Rico-Gray 1990).

A total of 21 specimens were examined, 13 females and eight males. All measurements are given in millimeters, maximum and minimum; the numbers within parentheses correspond to the mean. Body length was considered to be the distance from the anterior edge of the carapace to the posterior edge of the opisthosoma, carapace length from its anterior to its posterior edge, as well as the opisthosoma length, including spinnerets. Carapace width was taken at the third leg pair; opisthosoma width was taken at the middle. The general description was based upon dried specimens, since those wet in alcohol appear darker and the setae covering carapace and legs are not clearly visible; in over-dried specimens the chelicerae color may look paler. The holotype and paratype were those complete specimens closer to the mean. All type specimens are deposited in the National Arachnid Collection (CNAN), Laboratorio de Acarología, Instituto de Biología, UNAM, México.

Only the most common abbreviations were used in the description: AME = anterior median eyes, PME = posterior median eyes, PLE = posterior lateral eyes, RTA = retrolateral tibial apophysis. For male and female genitalia the names used in Lachmuth et al. (1985) were kept as close as possible. For the male bulb: embolus = Em; terminal apophysis = TAp; embolar apophysis = EAp; conductor = Co; embolar base = StE. For the female epigynum: median plate (septum) = MP; lateral plate = LP; seminal receptacle = R; seminal duct = SD.

TAXONOMY

Family Ctenidae Keyserling 1877

Genus *Cupiennius* Simon 1891

Cupiennius chiapanensis new species

Type material.—Mexico: *Chiapas*: Holotype female, from the island "Solo Tú", 15°04'28"N, 92°45'49"W, 17 April 2003, Y.

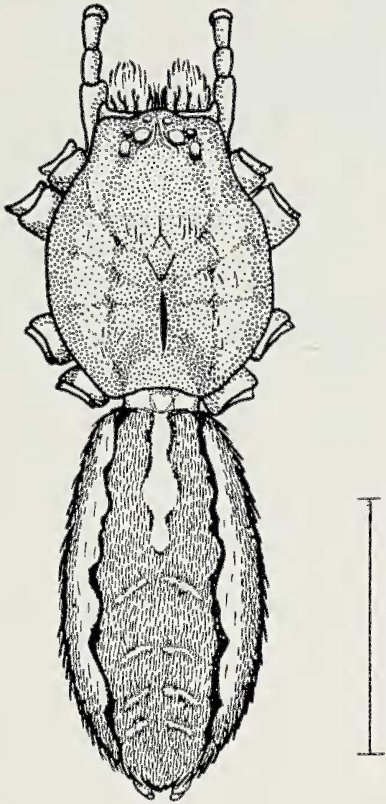
García Martínez (CNAN). Allotype male, from the path "La Vida Sigüe", next to the monitoring station of the reserve "La Encrucijada", 15°04'06"N, 92°45'20"W, 10 April 2003, F. Medina (CNAN). Paratypes: 9 females from the path "La Vida Sigüe" and 3 females from the island "Solo Tú"; 6 males collected from "La Vida Sigüe" and 1 male from "Solo Tú".

Etymology.—The specific epithet refers to the state where the species was found.

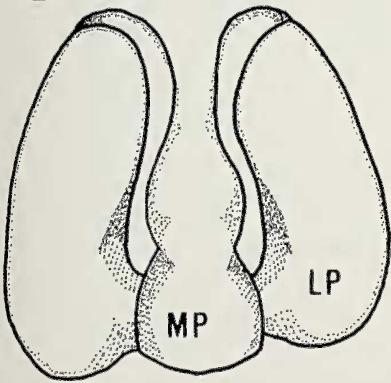
Diagnosis.—*Cupiennius chiapanensis* is distinguished from other species of the genus by the characteristic color of the chelicerae which are mostly covered by bright red setae in females and pale red setae in males. The female has the epigynal lateral plates curved on the inner edge; the septum is thinner in its upper part and wider below, rounded in the middle and square at the end (Fig. 2); the seminal receptacles are spherical with a small distal hump and bits of cuticle adhered to the surface (Fig. 3). The male pedipalp has the RTA triangular viewed from the front, and square viewed from the side (Fig. 6); the bulb is quite similar to that of *Cupiennius getazi* (Lachmuth et al. 1985, fig. 3), but the terminal apophysis has the upper edge gently sloping rather than almost square; the embolar apophysis is longer and thinner; the conductor is larger, overlapping with the terminal apophysis and the embolar base has clearly visible keels through the upper and lower edges of its extension (Fig. 7).

Description.—*Female*: Total length 21.9–27.0 mm (25.3); carapace length 9.4–13.1 mm (10.8), width 9.0–10.5 mm (9.7); opisthosoma length 11.0–15.0 mm (13.4), width 6.4–8.9 mm (8.2). Leg I: femur 10.9–16.8 (12.2), patella 4.4–5.7 (5.3), tibia 10.2–12.7 (11.3), metatarsus 9.1–13.2 (11.2), tarsus 3.0–5.0 (4.1). Leg II: femur 10.7–13.5 (11.9), patella 4.3–5.9 (5.2), tibia 9.9–13.1 (10.8), metatarsus 9.3–13.8 (11.2), tarsus 3.2–4.3 (3.9). Leg III: femur 8.1–12.9 (9.9), patella 4.3–5.9 (5.2), tibia 6.0–10.3 (8.1), metatarsus 6.7–12.2 (8.8), tarsus 2.5–4.2 (3.4). Leg IV: femur 10.5–13.7 (11.6), patella 3.7–5.5 (4.6), tibia 8.3–11.6 (9.6), metatarsus 10.9–15.1 (12.5), tarsus 3.2–4.8 (3.9). Pedipalp: femur 4.1–5.7 (4.7), patella 1.8–2.5 (2.1), tibia 3.3–4.0 (3.5), tarsus 3.6–4.6 (3.9). *Prosoma*: Carapace orange-brown with a darker brown median band that begins behind PME, reaching posterior edge;

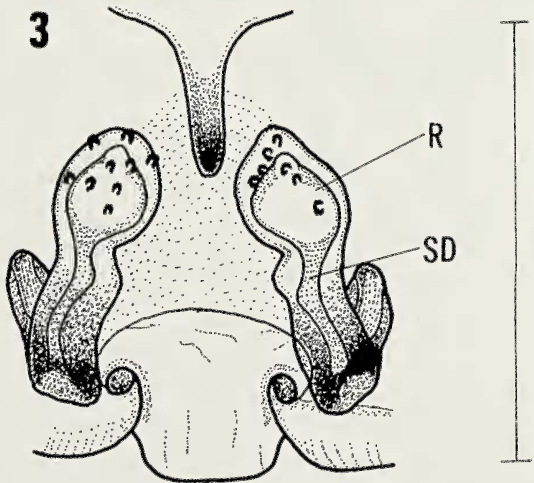
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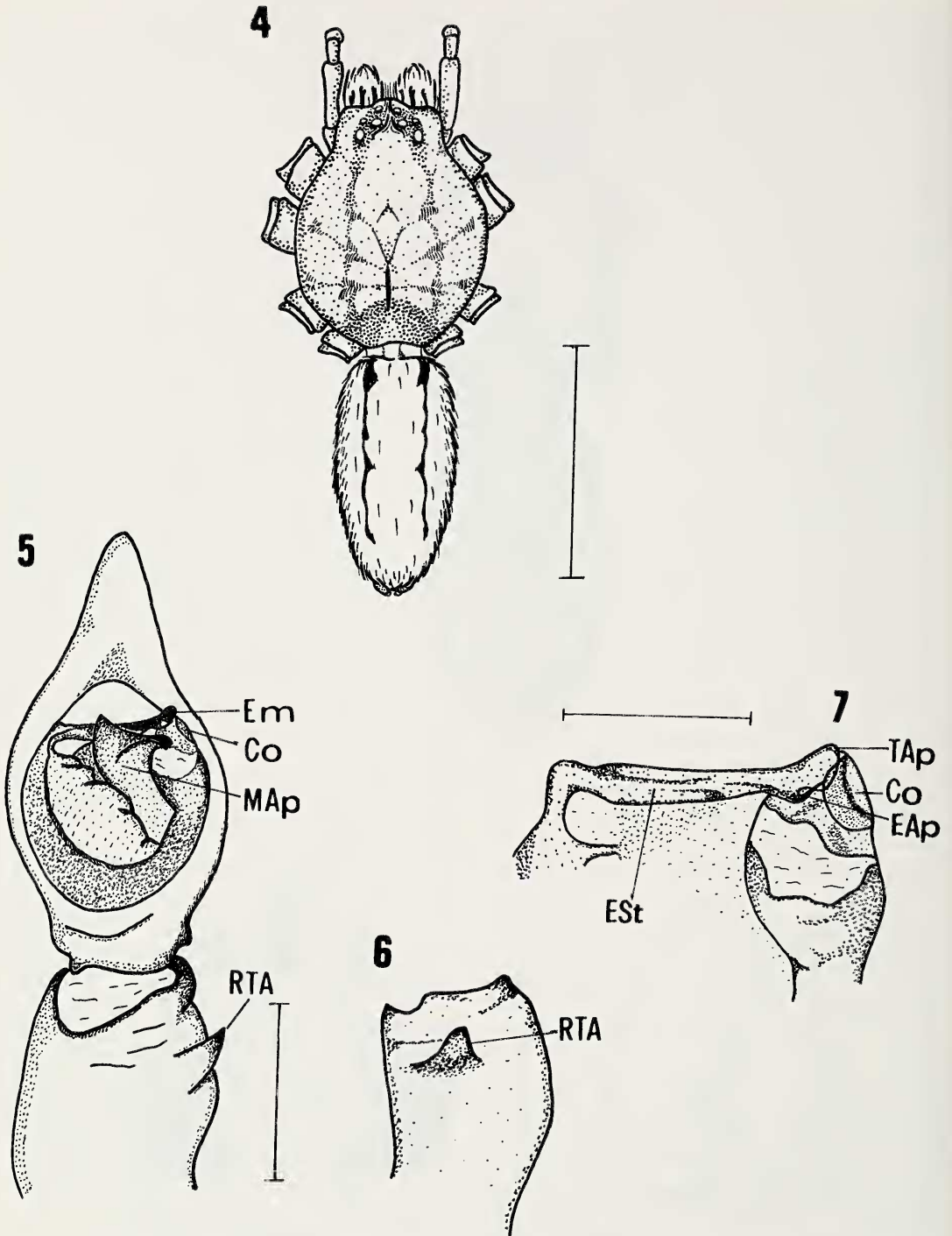
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Figures 1-3.—*Cupiennius chiapanensis* new species, female. 1. Dorsal aspect of body, scale = 1.0 cm; 2. Ventral view of epigynum, scale = 1.0 mm; 3. Dorsal view of epigynum, scale = 1.0 mm. MP = median plate, LP = lateral plate, R = seminal receptacle, SD = seminal duct.



Figures 4-7.—*Cupiennius chiapanensis* new species, male. 4. Dorsal aspect of body, scale = 1.0 cm; 5. Ventral view of left pedipalp, scale = 1.0 mm; 6. Retrolateral view of left pedipalp tibia; 7. Embolar area, scale = 0.5 mm. Em = embolus, Co = conductor, MAp = median apophysis, RTA = retrolateral tibial apophysis, TAp = terminal apophysis, EAp = embolar apophysis, Est = embolar base.

surface covered by short, white setae, except for small spots over ocular area and behind the PLE, where short black setae cover the spot. Long, white setae along the entire carapace edge, those on the anterior lateral edge red colored. Ocular area slightly elevated, long black setae below AME and in between them with long white setae between the PME and PLE and between each other. Fovea longitudinal with two long, erected setae on anterior edge and divergent black lines of short setae leading up to the edge of the carapace. Endites black with long white setae along anterior edge, with white border; long black setae curved downwards coming from the lateral endite edge. Labium trapezoidal, black colored with anterior border white and covered with long black setae. Sternum light brown with black border, covered with long black setae mixed with short white setae. Coxae the same color as sternum. *Opisthosoma*: General color brown-grayish, covered with long, thick white setae. Median black band with winding edge on dorsum in which there is a shorter white band that reaches up to less than half its length, dorsal pattern as illustrated (Fig. 1). Sides of opisthosoma dark and covered with long brown setae. Ventral surface light brown, with a median longitudinal black band, beginning in the epigastric furrow and ending at the spinneret circled area. Anterior spinnerets light brown with white apical band, posterior spinnerets darker and slightly longer and thinner. Epigynum with the common structure in the genus, two lateral plates and a median plate or septum. Septum thin anteriorly and wider posteriorly, rounded in the middle, then constrained and ending in a square shape. Lateral plates curved on their inner side, linked to the septum by their upper lateral edge, on the dorsal side (Fig. 2). Seminal receptacles spherical, with a small anterior mound and dark bits of cuticle adhered to their surface, similar to the "porose area" described for other lycosoid families by Griswold (1993), the diameter less than half of duct length. Ducts straight, elbowed on the last two thirds (Fig. 3). *Chelicerae*: General color black, covered with long bright setae on their front surface, up to three quarters of their length, with a few scattered black long setae. Interior border of chelicerae with long white setae, fangs black. *Pedipalps*: General color dark brown, covered with white setae. *Legs*: General color dark

brown, covered with short white setae, in living spiders the legs look much darker than the rest of the body. Coxae with long black setae on ventral surface, all trochanters notched with a median transverse band of long black setae. Femora densely covered with long black setae with white tip, mixed with short white setae. Femur I with three dorsal spines, 3 prolateral and 3 retrolateral, and dorsum covered with short white setae concentrated in two bands on anterior half. Femur II with two bands of white setae. Femur III without complete bands, only spots visible on dorsum. Femur IV without bands. Patellae dark brown covered with white short setae, mixed with some long black ones, without spines. Tibiae dorsally darker and devoid of setae, with one prolateral spine, one retrolateral and three pairs of ventral spines; ventral surface covered with short white setae. Metatarsi without setae on dorsum, with an irregular row of trichobothria, two pairs of dorsal spines, 3 prolateral, 3 retrolateral and two pairs of ventral spines. Scopula covering the whole ventral surface of metatarsi, except the posterior edge. Tarsi dorsally covered with dense scopula, mixed with tarsal tufts, three tarsal claws, dorsum covered with short white setae and one or two trichobothria.

Male: Total length 7.6–23.6 mm (20.4); carapace length 8.3–10.8 mm (9.5), width 7.8–18.9 mm (9.8), opisthosoma length 8.6–11.9 mm (10.3), width 4.5–16.0 mm (7.2). Leg I: femur 10.9–12.3 (11.7), patella 4.2–5.5 (4.8), tibia 10.6–13.1 (11.8), metatarsus 11.3–14.2 (12.8), tarsus 4.1–5.0 (4.6). Leg II: femur 11.3–12.7 (12.1), patella 4.5–5.9 (5.1), tibia 10.8–12.5 (11.4), metatarso 10.8–13.5 (12.6), tarsus 3.8–4.6 (4.3). Leg III: femur 9.7–11.5 (10.4), patella 3.4–4.5 (3.9), tibia 7.0–8.7 (8.0), metatarsus 8.8–10.2 (9.5), tarsus 3.1–4.2 (3.6). Leg IV: femur 10.8–11.5 (11.3), patella 3.8–5.2 (4.2), tibia 9.3–10.8 (10.0), metatarsus 11.4–13.4 (12.4), tarsus 3.5–4.5 (4.2). Pedipalp: femur 3.1–5.0 (4.4), patella 1.7–2.6 (2.0), tibia 2.8–4.0 (3.5), tarsus 2.9–3.8 (3.2).

Prosoma: Carapace color orange-brown, with a median darker band, beginning behind the PME and reaching the posterior edge. Surface entirely covered with short grayish setae that leave only two parallel black lines delineating the median band. Long white setae along the margin, those on the anterior lateral border orange colored. Ocular area slightly el-

evated, with white setae above the posterior eyes and between the median eyes. Fovea longitudinal. *Opisthosoma*: General color dark gray, covered with light brown setae, except some small spots where the setae have come off, without any pattern but a pair of parallel black lines that follow from the carapace (Fig. 4). Ventral surface light gray with a median black band originating at the epigastric furrow and ending at the circled spinneret area. *Chelicerae*: General color black, covered with pale red setae on most of their surface, up to two thirds their length, with some scattered long black setae, interior border with long white setae, fangs black. Endites and labium dark brown with long black setae. Sternum and coxae light brown, covered with grayish short setae. *Pedipalps*: General color same as the carapace, dorsally covered with short grayish setae, femur with one dorsal and three apical spines, patella with one apical prolateral spine, tibia with two dorsal spines and long white setae on its lateral borders. RTA short with square shape in lateral view and triangular in ventral view (Fig. 5). Cymbium dark brown, covered with short black and white setae, bulb in agreement to the general structure of the genus and very similar to that of *C. getazi* (Fig. 5). Median apophysis with the upper side rounded and the lateral process sharp and curved downwards. Embolus ending close to the conductor; embolar apophysis slender, hook shaped, and the tip covered with the terminal apophysis, which is slightly ovoid and the upper edge slopes down to the embolar base; conductor rounded and directed outwards, bent downwards on its distal portion, covering part of the embolus (Fig. 7). *Legs*: Same color as the carapace covered with light grayish setae, with no visible bands, only dark spots on dorsum. Femur with spines similar to those of the female. All legs covered with light setae, except dorsal surfaces of tibiae and metatarsi. Dorsal irregular row of trichobothria on metatarsi; tarsi with no visible trichobothria. Ventral surface of metatarsi covered with scopula, not as dense as in the female, and beginning at the second third of its length. Tarsi completely covered with scopula and claw tufts, three tarsal claws. Other structures as in the female.

Distribution.—This species has only been collected from the mangrove forest of “La

Encrucijada”, municipality of Acapetahua, Chiapas state, México.

DISCUSSION

The first external characteristic indicating that *Cupiennius chiapanensis* could represent a distinct species was the striking red color of the chelicerae, which couldn't have been overlooked in any other description and is an invariable feature of every adult which is not lost when kept in alcohol at least after one year; therefore, it is herein regarded as a diagnostic character. This red color probably led to the confusion of this spider with *Phoneutria fera*, in two photographic references. The first one is from a web site from Australia (Spider Homepage 2000), where some pictures were sent by a photographer and incorrectly identified; the other is from a book on tarantulas where it is regarded as “the Brazilian huntsman spider” (Browning 1989:67). A third reference was found in the book “Arañas de Chiapas”, where it is stated that the spider probably belongs in *Phoneutria* due to the color of the chelicerae (Alvarez del Toro 1992, plate 63). *Cupiennius salei* sometimes shows red setae on the chelicerae too, as can be observed in color drawings (Cambridge 1900) and even in living spiders, however, they don't fully cover the front of the chelicerae, so the characteristic dark longitudinal bands of this species prevail.

Barth & Cordes (1998) consider the coloration of the sternum and coxae as a character to separate some of the species of the genus, pointing out that external body pattern could allow the identification of even subadult specimens. The ventral pattern of *C. chiapanensis* is similar to that of *C. valentinei* Petrunkevitch 1925, which is the only other species with a ventral black median band. The rest of the coloration, including the dorsal opisthosomal pattern, is very similar to *C. getazi*, which however shows a distinctive spotted ventral surface of the femora, that is not present in this new species. *Cupiennius chiapanensis* is also similar to *C. getazi* in the shape of the seminal receptacles and ducts, but the small distal mound and the granules all over the surface of the receptacles, together with the external shape of the epigynum, set them apart.

Before this study, only *Cupiennius remedi* was known to share habitat with *C. salei*,

in the highlands of Guatemala (Barth & Cordes 1998). Here, *C. chiapanensis* is the second species to exist in the same place as *C. salei*, but at different times. During the wet season, between September and October 2002, 35 adults of *C. salei* were collected at exactly the same sites where 18 of *C. chiapanensis* had been obtained in the dry season, including females carrying egg sacs attached to their spinnerets. Adults of both species at the same time were never found. Juveniles, on the other hand, are morphologically very similar, so their identification was not possible. In this study, the first report of *C. salei* at a lower altitude than 800 msnm is given, for it was formerly considered to be a highland species (Barth & Seyfarth 1979).

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LITERATURE CITED

Álvarez del Toro, M. 1992. Las arañas de Chiapas. Ed. Universidad Autónoma de Chiapas. México.

- Barth, F.G. & D. Cordes. 1998. *Cupiennius remedi* new species (Araneae, Ctenidae) and a key to the genus. *Journal of Arachnology* 26:133–141.
- Barth, F.G. & E.A. Seyfarth. 1979. *Cupiennius salei* Keys (Araneae) in the highlands of central Guatemala. *Journal of Arachnology* 7:255–263.
- Browning, J.G. 1989. Tarantulas. T.F.H. Publications, Inc.
- Cambridge, F.O.-P. 1900. Arachnida—Araneida and Opiliones. In *Biologia Centrali-Americana, Zoology*. Taylor and Francis, London, vol. 2:89–192.
- Lachmuth, U., M. Grasshoff & F.G. Barth. 1985. Taxonomische revision der Gattung *Cupiennius* Simon 1891 (Arachnida: Araneae: Ctenidae). *Senckenbergiana Biologica* 65:329–372.
- Rico-Gray, V. 1990. Observaciones y comentarios preliminares al estado actual de la flora y vegetación de La Encrucijada municipio de Acapetahua, Chiapas, México. Informe del Programa Flora de México. Proyecto "Flora Yucatanensis".
- Simon, E. 1891. Descriptions de quelques arachnides du Costa Rica communiqués par M. A. Getaz (de Genève). *Bulletin de la Société Zoologique de France* 16:109–112.
- Spider Homepage (2000). <http://www.rochedalss.qld.edu.au/spider/wandering.htm>.

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